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Tool Engineer

Vol. IV. No. 2.

JUNE
1935

A. S. T. E. OFFICERS
PLAN BIG
YEAR

See page 11



See Page 16

Official Publication of the

AMERICAN SOCIETY OF TOOL ENGINEERS

for "All Round" INTERNAL GRINDING

WHILE a large number of our machines are sold for production work and therefore automatic equipment is selected, yet there are many shops and tool rooms with miscellaneous work and varied size lots that are buying the Plain Style No. 72A which is ideal for their requirements.

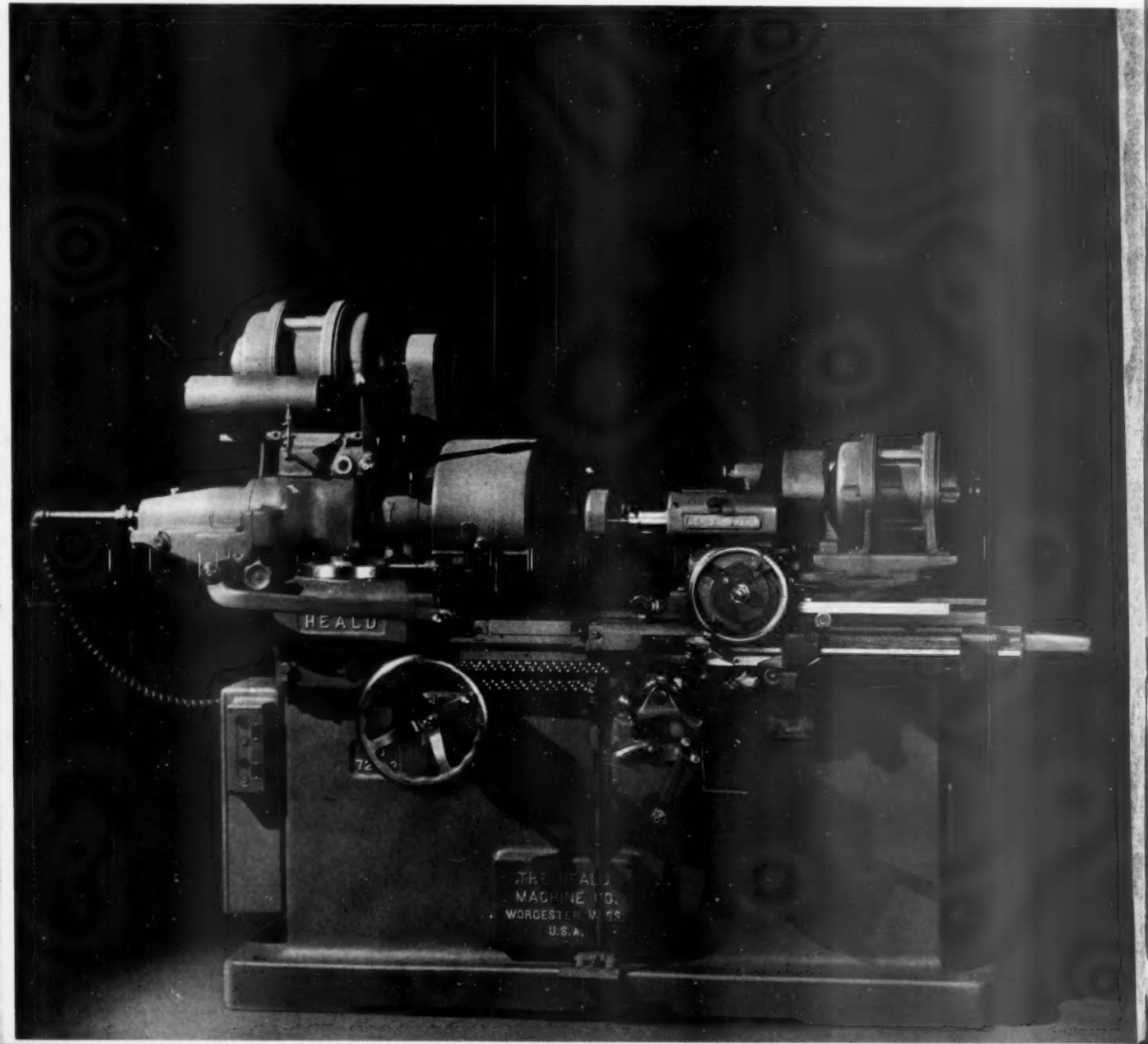
This machine can be readily arranged with various fixtures, grinds straight or taper, and can be equipped with cross slide workhead, raising blocks, center rest, facing attachment and other units.

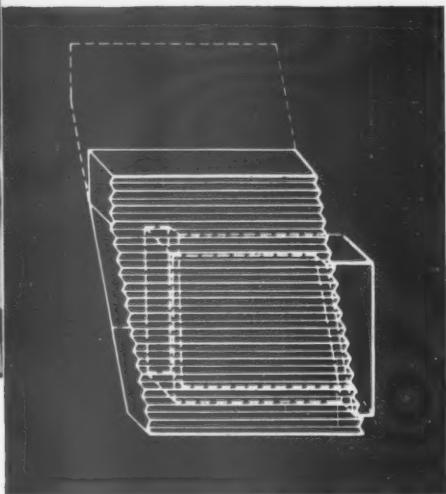
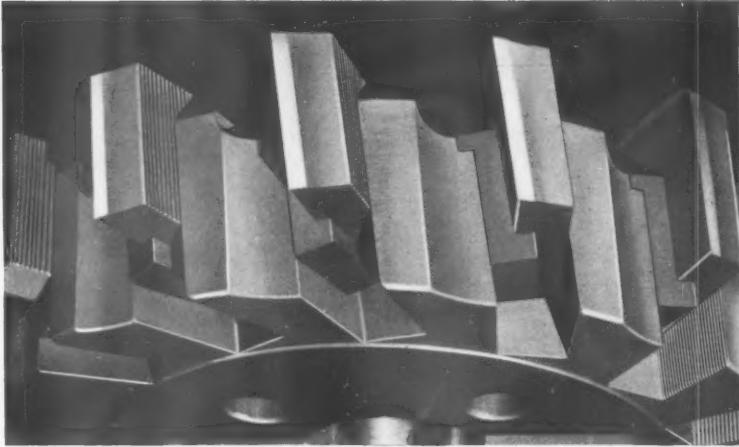
The Plain No. 72A is equipped with a hydraulic drive for the table which is especially desirable for miscellaneous work as it gives any speed desired and can be stopped or reversed instantly at any point.

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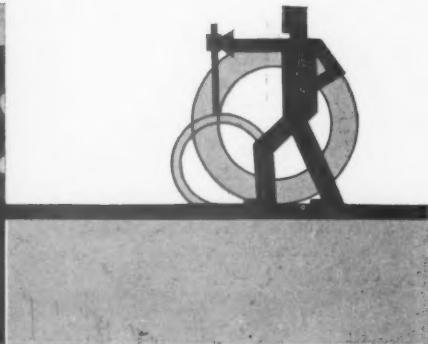
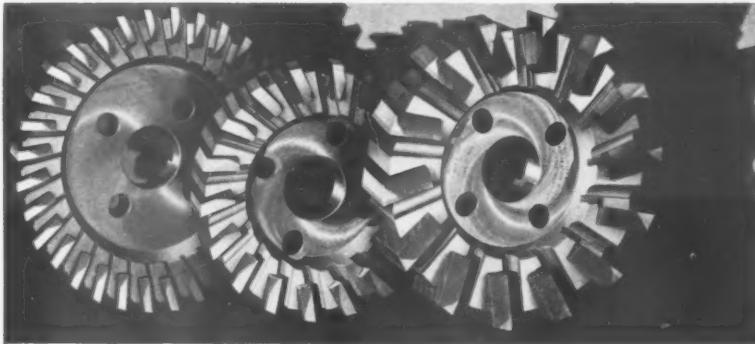


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THE TOOL ENGINEER FOR JUNE, 1935



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The Tool Engineer

Official Publication of the AMERICAN SOCIETY OF TOOL ENGINEERS

Vol. IV

JUNE, 1935

No. 2

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Application blanks and information pertaining to membership in the American Society of Tool Engineers may be had by addressing *The Tool Engineer*, 2842 W. Grand Boulevard, Detroit, Michigan, or the Secretary's office, 31 Melbourne Ave. Detroit, Michigan. **Dues** are \$5 initiation fee, \$3 per year for senior grade membership and \$2 per year for junior grade membership.

The Tool Engineer is published on the first Thursday of each month. It is the official publication of the American Society of Tool Engineers, Incorporated. The membership of the Society and readers of this publication are practical manufacturing executives such as master mechanics, works managers, tool engineers, tool designers and others who are responsible for production in hundreds of plants throughout the nation and in foreign countries.

Owing to the nature of the American Society of Tool Engineers organization, it cannot, nor can the publishers be responsible for statements appearing in this publication either as papers presented at its meetings or the discussion of such papers printed herein.

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in

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The Tool Engineer Moves Offices to the Curtis Building, Detroit

On June 1st, headquarters of *The Tool Engineer* were moved to the Curtis Building, 2842 West Grand Boulevard, Detroit, Michigan.

Additional space was needed for this growing publication, which the new quarters provide—as well as a central, very convenient location.

A.S.T.E. members and friends of *The Tool Engineer* are invited to visit the new offices.

New Telephone No. MADISON 7553

HANNIFIN VALVES for positive control of AIR POWER



INVESTIGATE the economy and production possibilities of Hannifin Air Control Valves for providing correct operating pressures and accurate control of air-operated machinery. Hannifin Valves will provide improved operation, faster production, and an end to costly interruptions and repair expenses. They are designed for production operations, and used by the leaders of American industry. Choose from the complete range of Hannifin air control valves—the products of specialists in pneumatic and hydraulic equipment.



"PACK-LESS" AIR CONTROL VALVES



valve. The face of the bronze disc is ground and lapped to make a perfect seal with the seat. The simplicity and perfection of this design means reliable, accurate control. Maintenance is limited to re-lapping of the seat and disc after long service.

• STANDARD HAND CONTROL VALVES

Four-way type for control of double acting cylinders, for air pressures to 150 lbs./sq. in. or hydraulic pressures to 250 lbs./sq. in. Four standard types, 45 or 90 deg. movement. May also be used for three-way control of single acting cylinder.



• PEDAL OPERATED VALVES

With 45 deg. movement, no shut-off position. With 90 deg. movement, both outlet and exhaust closed in neutral. May be used as a throttling valve.



• SPRING RETURN VALVES

With 45 deg. movement, no shut-off position, and spring return for instant reversal of cylinder upon release of pedal.



• ROTARY TYPE VALVE

Heavy duty foot operated type. One pressure operates the cylinder, second pressure reverses the cylinder.



• MANIFOLD TYPES

Concentrates control of several cylinders and simplifies piping. Four standard types, 45 or 90 deg. movement and spring return types, for various standard cycles of control.



• DUPLEX TYPES

For control of two double acting cylinders, which may be operated in either direction and in any sequence desired.



• ELECTRIC TYPES

Hannifin single and double types for remote control, for time-cycle operation, for four-way control, and a wide range of standard and special applications.



• PRESSURE REGULATING VALVE

A spring loaded piston type regulating valve of high-grade bronze construction, correctly designed for accurate, sensitive automatic control. Instantly adjustable to provide the most economical working pressure for any operation.



• AIR CYLINDERS

Stationary single acting and double acting types. Improved "Leak-Proof" construction with piston seal adjustable from outside the cylinder. A style and size for every need.



Hannifin Engineers, with over 26 years of specialized experience, offer authoritative advice on controls and standard and special pneumatic or hydraulic production tool equipment. Send for special valve bulletin No. 34.

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JUNE A.S.T.E. EVENTS

(Detroit)

THIRD ANNUAL SPRING FROLIC*



*This event supplants a June technical meeting, and will be held on the regular meeting night at the Amaranth Temple Auditorium, corner of Gratiot Avenue at McDougall. This frolic will be open to members and their guests.

There will be no meeting at the Fort Shelby Hotel until next season.

AMARANTH TEMPLE AUDITORIUM

Gratiot at McDougall

8:30 p. m.

Thursday, June 13th, 1935

Plenty of Refreshments and Lunch

BIG FLOOR SHOW

SURPRISES

Admission \$1.25

Get tickets from committee, Secretary's Office or at door

THIRD ANNUAL OUTING



MAPLE GROVE PARK

Sunday, June 30th, 1935

Admission Free

Maple Grove Park, the same park in which the last year's Annual Outing was held, is located on Utica Road, between the 15 and 16 Mile Roads—one third mile north of Schoenherr Road. A large banner will mark the entrance to this park on Utica Road.

This is the one event of the year when the whole family comes along and everybody has a good time. There will be plenty of entertainment for everyone—all kinds of athletic games for both the children and the adults. A beautiful covered pavillion will be available for dancing. Refreshments, including soft drinks, coffee, ice cream etc. will be sold at nominal prices.

Come early—bring the entire family and your friends.

Prizes will be awarded winners of sporting events.

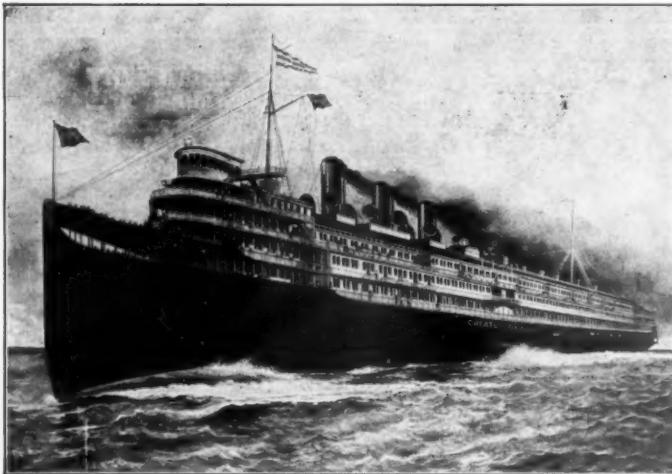
★ "ON TO CLEVELAND" ★

WITH

A. S. T. E.

TO THE MACHINE TOOL SHOW

1,000 or more
members and
their friends
are
GOING
—
Are
You
Going?



This is the
Floating Hotel
already char-
tered for this
extraordinary
event—the
largest inland
water steamer
in the world.

PLAN, NOW, TO GO

FACTS: The D & C Steamer *Greater Detroit* has already been chartered for the trip. The entire ship will be for the exclusive use of A. S. T. E. members and their friends. The ship is eight stories high, has more passenger accommodations than the Leviathan, cost \$3,500,000, is the largest inland water boat in the world. 650 staterooms and twenty-four parlors with bath, 130 staterooms with toilets are available for reservations. There are more than 300 officers and men in the crew of this giant of the lakes which is more than two blocks long. It is powered by the largest Corliss type engine in the world, generating 10,000 horsepower and a speed of 21 miles per hour.

COST: The cost of this trip including transportation, stateroom accommodations, entrance to the Machine Tool Congress, banquet at the A. S. T. E. Session of the Congress, breakfast on the boat etc. will be very nominal. Your "On to Cleveland" committee is working hard to bring this down as low as possible. Tickets will be sold as an "all-expense" trip with the exception of meals you may wish to take while in Cleveland other than the banquet Friday evening.

WHEN: Steamer leaves Detroit Thursday Evening, September 12th (our regular meeting night for September). Exact time will be announced later. The following day September 13th will be A. S. T. E. day at the exposition. Friday evening September 13th will be given to the session sponsored by A. S. T. E.—the high light of the trip—entertainment, good food at the banquet, souvenirs etc., etc. *Be there.* Boat leaves for return trip around midnight (or after)—depending on you—arriving back in Detroit Saturday morning September 14th. Note: You can rest up Saturday and Sunday.

WHY YOU SHOULD GO: If you don't go you'll *wish* you had—"a good time will be had" by all, we assure you. You'll have a chance to "play" with your friends and fellow workers. At the Machine Tool Exposition you will have an opportunity to see everything that's new in your line, meet friends and guests from all over the world.

★ FULL DETAILS WILL BE GIVEN NEXT MONTH ★

TELEPHONE ENGINEERING

by R. Foulkrod

This talk by Mr. R. Foulkrod, Plant Extension Engineer of the Michigan Bell Telephone Company in Detroit, was given before the May meeting of the American Society of Tool Engineers held at the Fort Shelby Hotel, May 13th, 1935. The speaker used stereopticon slides to illustrate his talk.

Mr. Chairman, Mr. President, Members of the American Society of Tool Engineers, and Guests:

Mr. Fors asked me if I would come over to talk to you and tell you something about telephone engineering. He was not exactly certain as to the particular phase of telephone engineering which he felt would be most interesting to you and left the choice up to me. I have prepared something which I hope will be of interest to you, and will endeavor to cover, in a general way, most of the field of telephone engineering in the short time available. While I am talking, if you would like to ask me any questions, please do not hesitate to stop me.

In engineering a telephone plant there are three main sub-divisions which should be considered:

First, the telephone instrument itself, which is a combined generator and motor, the transmitter being the generator and the receiver the motor. The generator receives the impulses from the voice waves and converts them into electrical impulses which follow faithfully the variations in density of the voice waves causing them, while the receiver takes these electrical impulses and reconverts them into acoustic energy. The efficiency of these instruments is the basis of practically all telephone engineering since the output of both the transmitter and the motor must be known accurately before the remainder of the plant can be designed.

Second, between the telephone instruments and the switching centers we must have some sort of lines to connect the instruments to the switching device and that is the second main subdivision of the telephone plant.

The third sub-division is the switching device itself. The telephone instruments must be connected to this switching center so that any telephone in the United States can be connected to any other telephone either in the United States or, in fact, most of the world.

As a matter of interest before proceeding with the detailed discussion of the three main component parts of the telephone plant, I thought it would be interesting to point out the vast strides that have been made in communication in the last century and a half. For example, the battles of Concord and Lexington were fought on April 19, 1775, and

the news did not reach North Carolina until almost one month later. Today news events of major importance travel around the world in a very short space of time, and with the aid of the newspapers are disseminated to the people within an hour or two after the actual event occurs.

Returning now to the first main portion of the telephone plant and describing it in some detail, the original telephone instrument was invented by Bell and the patent obtained on it in the year 1876. This original instrument was, in principle, the same as the telephone receiver which is a portion of the telephone set that you use today. It was used for both talking and listening but, as a transmitting device, it was very inefficient as compared with the types of transmitters which we use now. The efficiency, that is, the electrical output of transmitters has been increased many times during the last 50 years until we have today, in the common handset with which you are familiar, one of the most efficient devices for the conversion of acoustic energy to electrical energy that we have ever known, and correspondingly, the receiver on that same set is many times more efficient than similar devices used some years ago.

The progress in the development of transmitters and receivers has been steady throughout the last 50 years and each improvement in efficiency has had its reactions on the other portions of the plant usually in the form of permitting the use of finer gauge wires than were possible with the less efficient instruments.

Discussing briefly the circuits which connect the telephone instrument to the switching center, it is of interest to note that these circuits, up until 1890, were entirely of the open wire type of construction, that is, wires strung on pole lines which were usually located on the highways in the country and on the streets in the cities. These pole lines reached such proportions in the latter part of the last century that some of them in New York City employed poles 90 feet in height carrying 60 crossarms each. Such a condition obviously could not be continued indefinitely and efforts were made to develop a suitable type of cable. Various methods were tried until one enterprising young engineer of the Western Electric Company hit upon the happy idea of wrapping wire spirally with paper tape in order to insulate each wire in the cable from every other one in the same sheath. This same practice has been continued until quite recently, and the wires in the majority of the cables we are now using are wrapped with a paper tape and then twisted into pairs. The twist is necessary to prevent "cross-talk" between adjacent pairs in the same cable, and also serves to keep the two wires of a pair together for purposes of identification. The original cables made in the manner described briefly above con-

tained 50 pairs of conductors while those we use today contain as high as 1818 pairs of conductors in a sheath not much larger than the original one containing only 50.

The sheath itself is made of lead and is compressed on the cable by means of hydraulic presses, rendering the wires and the insulation surrounding them water tight and free from humidity and other effects which would interfere with their function as the carriers of high frequency electric current. These cables, either placed underground or on pole lines, are used to connect the telephone instruments to the switching centers, and in the case of our long toll circuits, are frequently used to connect the exchanges in various cities to each other. The toll cables themselves are of a somewhat different type of construction internally than the local exchange cables in order to permit the use of phantom circuits.

A phantom circuit is one which is obtained by superposing voice currents on two pairs of wires so that they do not interfere with conversations which may be carried on either pair, and thus permits the transmittal of three simultaneous conversations over two pairs of wires.

The switching devices themselves have progressed from the original crude board of the 1880's to the large dial offices such as those we have in service in Detroit today. This progress has been steady throughout the last 50 years and the switchboards during that period have been of many types.

The original boards were, of course, of a very crude type, being made of a series of switches of the revolving type by means of which two lines could be connected together. As the early types of lines were single conductors with a ground return, it was necessary to arrange to switch together two wires only. This was followed by the development of the metallic circuit in which two wires were used to connect the telephone instrument to the switchboard, and the consequent complication of the switchboard to the extent of making it necessary to connect two wires of any one station to any other two wires. The early magneto boards, so called, were followed by a common battery board where the energy supplied to the transmitter was furnished from a central source over the wires connecting the station to the switchboard. All of these boards were of the manually operated type, that is, operators were employed to receive the orders from the subscriber and complete the desired connection.

It became increasingly evident that the manual system could not continue to expand indefinitely and that some means must be found for replacing manual with dial operation. The first development along this line was the Strowger step-by-step system. This system operates very much as the name employs, that is, the switches follow directly the impulses of the dial and complete the desired connection.

For the larger cities, however, an entirely new system was worked out known as the panel system which takes its name from the large rectangular panels in which are the terminals to which the selectors have access. This system is the type used

in the city of Detroit in all of our dial offices and is very intricate and involved. In principle, however, it may be explained briefly by saying that it follows the same sequence of operations as the manual central office equipment which it replaces, that is, it finds the line from which the receiver has been removed, it notifies the subscriber that it is ready for the order by the dial tone, it receives the order, and then proceeds to complete the desired connection. All operations in connection with the completion is governed by the "sender" which takes the place of the originating operator in the manual office.

There is still one other type of switchboard which is of interest and which, in general, is still manually operated and that is the toll board which exists in practically every large city in Michigan. This board, as the name implies, receives the request for toll connections and the operators proceed to complete them in most cases while the calling subscriber waits on the line. In large cities such as Detroit, if the call cannot be completed while the subscriber waits on the line, the ticket which contains all the necessary details, is forwarded to another line of switchboard known as the "point-to-point" board. The operators at this board, upon receiving the ticket, make every effort to reach the called party, and as soon as he or she is available, notify the calling party that the desired connection is available.

There is a third type of switchboard in the dial office, and that is the "through" board which is employed to complete connections from one city to another over toll circuits terminating in Detroit.

The routing of toll calls is something that is of interest to most people who have occasion to use a telephone for such purposes. A very comprehensive routing plan has been worked out covering the entire United States so that any subscriber located in any portion of this country can reach any other telephone subscriber with a minimum number of switches with the assurance that the transmission will be good. This has been accomplished by designating certain key switches as the major switching points through which all calls routed from one section of the country to another should pass in order to insure best results. These cities, seven in number, are known in our terminology as "regional centers," and they are San Francisco, Denver, Dallas, St. Louis, Chicago, Atlanta, and New York. Each of these regional centers is connected to every other one by the very highest grade of toll circuit which we can provide, and they are, in turn, connected to certain outlet points in each state of the Union. The operators routing instructions are so set up that she is obligated to handle the toll calls from one section of the country to another in accordance with the provisions of this switching scheme, involving in so far as possible the most satisfactory toll service throughout the United States.

In addition to the circuits within this country, numerous radio circuits are in operation between the United States and foreign countries. The best known one and the one most often used is, of course, between here and England, but in addition

(Continued on page 18)

NEW OFFICERS PREPARED FOR BIG A.S.T.E. YEAR

● ● ●

OUTLINE PLANS FOR YEAR OF PROGRESS AND DEVELOPMENT

BEFORE one of the largest meetings of the past season, newly elected officers of The Society were installed with ceremonies and talks by each officer that were highly inspiring and of keen interest to the membership who responded wholeheartedly to plans outlined for the ensuing year. These formalities took place at the regular April meeting held April 11th at the Fort Shelby Hotel in Detroit. In taking office, newly elected President, Robert M. Lippard said:

Mr. President, fellow tool engineers, and guests:

I greatly appreciate the privilege and honor you have bestowed on me in electing me to the office of president. It is a real privilege to serve you in any way I can. I have been connected with the Society almost from the start and it has always been a pleasure to have a part in the work, and the men that I have worked with have done everything possible to make this Society a real success.

In accepting this position, I do so with a deep sense of responsibility because I realize the men who have had charge of this Society made a mark which is rather difficult to attain. I also feel a sense of responsibility by reason of the fact that this Society is growing rapidly and those who have charge of the work during these next few years have a real job and a very responsible one.

Our organization is comparatively young. In fact, about three years ago there was a meeting of students and a few of the more far-seeing tool engineers who met in the office of Mr. O. B. Jones with the thought in mind of making possible a closer cooperation between the students and the more experienced tool engineers. At this time they discussed plans for a small Society with that aim in view, and before they knew it they found they had a real tool engineers' Society. We all know the results obtained from that meeting. We know that at that meeting they never could have conceived or imagined what the potentialities of such an organization might be. What has been accomplished is really something to be proud of.

In the constitution of our organization we have a section which outlines the purpose of our Society reading as follows: "In order to advance, promulgate, and further the work of the tool engineer, to bring about good fellowship among the members, to hold meetings and discussions on professional papers and to report meetings for that purpose, this Society is created."

I don't think there is much doubt as to the progress this Society has made in that direction.

We find here among the members of this organization, the tool engineers who plan the processes through which various manu-

facturing operations go. We find the manufacturers representatives and the sales engineers of the machine tool companies, also the manufacturers of the cutters, dies, jigs, and fixtures used in connection with the machine tools. Every branch of the industry is represented here. We are meeting on a common ground with our "official designation" checked with our hats in the check room and that is one thing we should always remember here. We are here in the spirit of good fellowship.

There is a lot of work to be done. This year we hope to carry the work along the same lines as in the past. We have some very ambitious plans in mind and we are going to strive in every way possible to win prestige, to put the organization on a higher plane—because it is only through that medium that the tool engineer can attain the position he deserves.

One outstanding thing has just happened. We have just been invited to sponsor a program at the Machine Tool Show at Cleveland, along with the Society of Automotive Engineers and the American Society of Mechanical Engineers. That is one of the finest things we have had happen to our Society, because it indicates that we are beginning to make a name for ourselves and to win the recognition we deserve.

As for the more detailed plans for the year, I want to announce the Chairmen of the various Committees for the year.

The first committee is the Standards Committee which is working along the lines of getting out standards and data sheets. The plans of this committee are not definitely formulated and the gentleman that has been carrying on this work for the past year has done his job so very well that we have asked him to continue. It gives me a great deal of pleasure to announce that Mr. William Smila will head this committee this year.

Another committee that has been doing some very fine work, which you probably would not know a great deal about is the Industrial Committee. The function of that committee is to assist our members in getting positions. I don't know how many of you men have had an opportunity to contact with this committee but we are certainly very glad to have been of some assistance to you. The man who is chairman of this committee is not here tonight. He is a man that has had a wide range of experience in that sort of work. I am pleased to announce that Mr. Urving Thomas will be chairman of the Industrial Committee.

The next committee is the Chapters Committee. Our organization is founded on the basis of being a national organization. At the present time we haven't done a great deal about

getting chapters outside of this city as we want to get firmly established before we start chapters. We notice a growing demand for chapters so we have established a committee to take care of such matters. It is with great pleasure that I announce Mr. Roy Bramson as chairman of the Chapters Committee.

I would like to digress a moment from the subject of committees. As you all know, we are publishing today a Journal—*The Tool Engineer*—the official journal of our Society. When we first formed the Society, we decided we should have a paper, so we undertook to publish a Journal ourselves. The old saying goes that "if you want to have a horse shod, a good idea is to go to a blacksmith." So we searched for a man who would be capable of doing the work. We got hold of Mr. Bramson, and after a trial period, which was very successful, we made a contract with Mr. Bramson to publish *The Tool Engineer* for us and I think the results he has obtained are quite evident by the fine Journals we have been receiving the past few months. I want to take this opportunity to thank Mr. Bramson for the fine work he is doing. I want to publicly thank him for the work he is doing for the organization.

Another committee that is a very important one is the Constitution and By-Laws Committee. Our constitution and by-laws were drawn up in the early days of the Society and we find from time to time that it needs modification and changes. During the last year we have had a man doing this work that has really been doing a fine job. In fact, we look to him today as sort of a Chief Justice and we have asked him to continue that work for the next year. I am glad to announce the appointment of Mr. Walter Wagner.

Again speaking of the Journal, while we do not officially publish this paper, we are vitally interested in its success. Therefore, we have a committee called the Editorial Committee that cooperates with Mr. Bramson to see that the proper announcements are made and the various mechanical and technical papers are correct. This committee is doing such a fine piece of work, under the leadership of Mr. Hart that we have asked him to continue for another year.

We have decided this year to do a little advertising. We feel it pays to advertise and we don't feel we have been getting quite the publicity we should. We have organized a Publicity Committee to get our name in the papers once in a while. This committee is new and we think they are really going to spread the news. Mr. O. B. Jones, a charter member of the organization, is appointed chairman of the Publicity Committee.

The Membership Committee, as you all know, is one of the very important committees. The question of getting members for an organization, arranging campaigns, follow up work, and all such necessary work is really a sizeable job. This year we have chosen a man we think is very capable of organizing this group and we are looking forward with a lot of expectations to the work this man is going to do. I announce the chairman of the Membership Committee as Mr. Robert Lindgren.

Now, I come to the last two committees, but not the least, in fact, the very important committees of our organization. I have in mind the Meetings and

the Entertainment Committees. The Meetings Committee functions are probably the most important functions. Our meetings are the high point of our Society. We must have interesting and instructive meetings, and also a good time and the success of the Society largely depend upon the success and the work of this Committee. We have picked a man who I am sure appreciates the necessity for doing the very best work he can. I am pleased to appoint as chairman, Mr. Bert Carpenter.

We now come to the Entertainment Committee. There is not very much I can say that will add to what an important part of our organization that is. The Entertainment Committee during the last year has been taken care of by a man who is glad to continue for the coming year. I am pleased to announce that Joe Siegel is Entertainment Committee chairman.

Before I close, there is one other committee I want to mention. As you know, I mentioned a while ago we are asked to sponsor a program at the Cleveland Machine Tool Show. We are also planning to sponsor a trip to the Cleveland Show. We are looking forward to getting a thousand men to go on that trip. We hope to be able to charter one of the lake boats so that you boys can get to Cleveland and have the finest time you will ever conceive. We will all have a very good time and want every one to work for the success of this trip.

I have spoken at considerable length. I want to again thank you for the very great privilege of serving you in this capacity and I can assure you I shall do everything in my power to further the interests of this organization.

Mr. Ford R. Lamb, First Vice President elect, spoke as follows:

Mr. President, Members of the A.S.T.E. and guests:

I appreciate the confidence the Directors have shown in electing me to this office and I am not unmindful of the responsibilities of the office. I have heard the President tell many of the plans for the coming year. I will do everything in my power to further and aid him in his plans. I want to state that we want and need the whole-hearted cooperation of the entire membership.

The officers are very much dependent upon you. We may be in the position of the colored man's wife Dinah. Sam was pulled before the judge on some charge and during the hearing the judge remarked to Sam that his wife was very dependent upon him, wasn't she? Sam said, "Yes, if I didn't hurry around and get washings for her to do, she'd starve plumb to death."

The officers must have the cooperation of the membership to make this Society really successful. (Here Mr. Lamb read the section from the Constitution regarding the purpose of the organization of the Society.)

To that I want to add that this Society should arouse among its members a deeper sense of civic responsibility and apply this to a more useful purpose. Tool Engineers are originators. Their education is mathematical. They approach problems from that standpoint. They know that 2 plus 2 equals 4. They never under any circumstances attempt to create a situation where 2 and 2 might equal 5. They can always prove facts. If President



ENGINEERED PRODUCTION

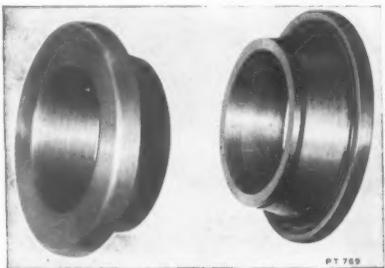
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Sundstrand Stub Lathes Turn Roller Bearing Cones

Considering high production, accuracy, durability, adaptability to other operations, and low capital investment; a battery of Sundstrand Stub Lathes often satisfies the most rigid requirements on a wide variety of turning. One example of such work is shown in Fig. 1. Here are inner cones for taper roller bearings. These are tough steel forgings that are turned on two of the 8" Stub Lathes shown in Fig. 2. One of the first three lathes in this group bores inside diameter, faces end, and turns outside diameter; as shown at left in Fig. 1. The two Stub Lathes in the



PT 769

Fig. 1—Roller Bearing Cones turned on Stub Lathes, foreground turn, bore, and face outer races for these bearings. These Stub Lathes have drum-cam feed for front and rear carriages, pneumatic work-holding devices and other features that speed up production and reduce operating costs. In addition to front and rear slides for rough-and finish-forming the taper; the last machine in the row has two overhead slides, one for finishing the neck, the other with pivoting tool for forming the radius under the

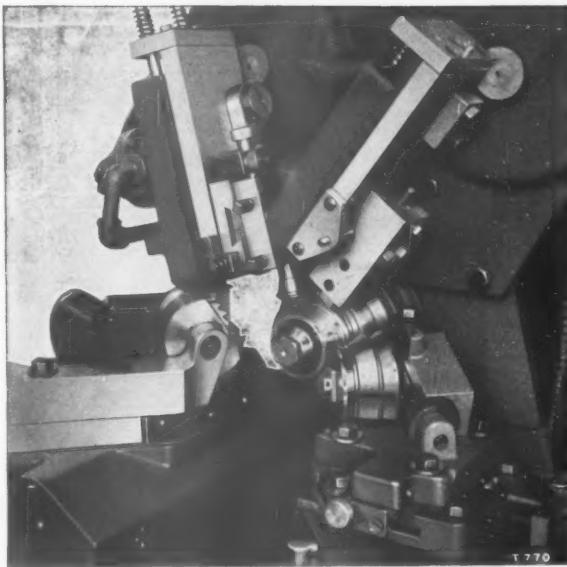


Fig. 3—Close-up of Stub Lathe tooling for roughing, necking, and grooving as shown at right in Fig. 1.

flange or inner cones as shown at right in Fig. 1. Production and cost figures on the work of this or many similar Stub Lathe installations will be supplied promptly on request.



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Fig. 2—Stub Lathe line for turning Roller Bearing Cones.

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Roosevelt had surrounded himself with a group of tool engineers as well as with the politicians, and had told them "Boys, go ahead and tool up for this government job," those tool engineers would have come through. Don't they always come through?

We have all heard plenty about the farmers as a group and the other groups, as necessary to the nation and community. I venture to say the farmer never heard of us as a group of tool engineers; and if we don't get away from this lone wolf attitude, the farmer never will hear of us as a group. We need to be more civic minded.

The tool engineer has developed his ability and paid too much attention to his job and hasn't developed his personality. I think what we need to do is to stop under-rating ourselves in this scheme of life.

A year ago I had the honor of standing before you and said that we had neglected to develop our personality. I used the expression "shrinking violet." We have had one more year of activity in the Society and the progress we have made hasn't changed my mind very much. Most of us realize that the process of developing our mental ability has caused us to neglect to develop ourselves along social lines.

We, as tool engineers, have not taken the rightful place we should have in our civic life. This Society offers an opportunity for us to develop. I would recommend that every member accept any appointment to committees, any nominations, as directors or any other opportunity to be active in the Society. Not only accept, but work for it. You will be surprised at the good you will get out of it.

The Society last year sponsored a Speakers Club for that purpose. We had about twenty members enrolled. If the tool engineers realized the importance of their profession and the necessity for development in civic life, we should have every member of the Society enrolled in the Speakers Club. We should realize the possibilities of a Society such as this. Let's go ahead and build on the nucleus we have started. Thank you.

Mr. W. M. Gray, Second Vice President Elect, spoke next, as follows:

MR. GRAY: Mr. President, Guests, and fellow Tool Engineers: You know, to be selected for some political office, through the medium of the radio, the papers, etc., that is an achievement. But to be selected by fellow-workers, men you know and work with—that is an honor. In the past the first and second lieutenants have had very little to do; but Captain Bob has said his program is going to different and the best part of it is we like it.

One of my duties tonight will be to explain to you just how you elect your representatives which are called directors and officers. I am going to read it.

Early in the fall, you members, at one of the regular meetings, elect the Nominating Committee which holds office for one year. The first duty of that Committee will be the selection and interviewing of candidates for directors. The names of those eligible candidates are given to the Secretary, who mails a ballot to each member for voting. The Board of Directors consists of 28 members and five officers. The 28 members are elected by you members. Late in the winter the Nominating Commit-

tee again goes into action, selecting and interviewing candidates for new officers. When completed, a list is made available to the Directors not later than the March Directors meeting. At that meeting the Directors elect the new officers for the following year. These officers are installed at the regular April meeting and are in office for one year.

You members elect the Nominating Committee and the Directors. The Nominating Committee selects candidates for the new officers who are elected by your representatives, the Directors.

I want to express my gratitude in being selected for this job and I am going to do all I can so that I won't fall down and break the confidence you have shown in me. Thanks a lot.

A. M. Sargent, re-elected Secretary, spoke as follows:

MR. SARGENT: Mr. President, gentlemen: As Mr. Carpenter stated I happened to have been the first Secretary appointed by the Society. At that time I didn't know exactly what it was all about, and I still don't. I really feel that each succeeding year, it is a great honor to have been re-elected to this office. This year, due to the Society's remarkable growth, it has been a greater honor than it has ever been before. It really has been inspiring to anyone to have been in a position to sit and work with the capable officers and with the committee chairmen the Society has elected the previous years, and it has been a privilege that one cannot turn down lightly to have been able to sit in on the various meetings and come to these membership meetings and see the remarkable growth this Society has had.

As you are all probably aware, the Secretary's office is merely a service office. It is our duty to follow along with the various officers' activities and committee chairmen, provide them with information and take care of the mechanical details of the Society. Really, it is a sort of clearing house for all of the work for the groups and Committees and for each individual member of the Society as well. There have no doubt been a great many instances in the past two or three years where individuals have felt that something was left undone by the Secretary's office that could have been done better or more promptly. If such has been the case, it has not been intentional. We have tried to improve the service the members and committees have been receiving and we hope that as time goes on, each individual activity and each individual member will feel that we are available to serve them in any way we possibly can.

The growth of the Society has meant that most of the business of the Society has passed through my individual hands and if each one of you members could come to the various committee meetings or ask to come in and see the work that is going on, I feel sure that each and every one of you would really appreciate the advantages that the Society is making possible. I don't believe there is an individual in the organization that has not directly or indirectly obtained some particular advantage in or from his membership and if there is such a member, I feel sure that in the next year, he will certainly have an opportunity to gain for himself some

(Continued on page 20)



B. L. DIAMOND

"Lee" Diamond, New Treasurer

B. L. ("Lee") Diamond, the new treasurer, has been connected with the tool industry for over twenty years.

A native of New York State, he came here when the Lozier Motor Company, with whom his father was connected,

moved their plant from Plattsburg, N. Y., to Detroit.

He has had a varied experience in the tool engineering field, having worked for the jobbing shops, automobile manufacturers, special machine builders, tool shops, tractor builders, gun builders, contract designing and about every phase of tool engineering.

He probably is best known as chief engineer of the Wayne Tool Company whose engineering department was well known for the quality of its work.

He is now working for "Al" Nancarrow of the Duplex Equipment Company as Sales Engineer.

* Through an error, this announcement of Mr. Diamond's election to A.S.T.E. Treasurer was unintentionally omitted in the announcement of new officers made in the last issue of THE TOOL ENGINEER. We regret that such an error should have occurred.

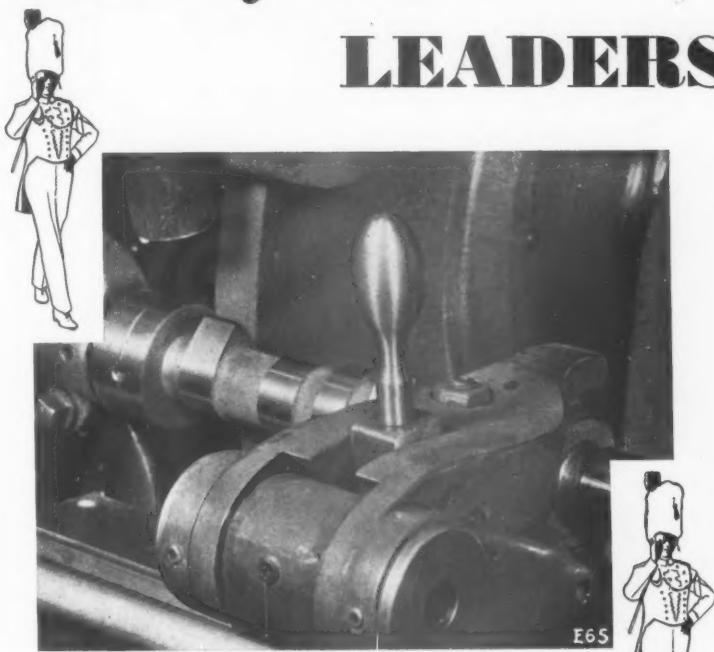
THIS MONTH'S COVER

Designed and constructed especially for the purpose, the huge press depicted on the cover of this issue of *The Tool Engineer* is employed to draw and flange the new solid steel "turret top" developed by Fisher Body and introduced this year on certain General Motors passenger car models.

Each of the one-piece, seamless steel roofs that is produced must pass through four of these industrial giants. Two of them in each "turret top" production line are toggle presses like the one illustrated, stand more than four stories high and weigh 500 tons apiece. The other two, which are of the tandem slide variety, are only slightly smaller. The larger machines, through their triple action, exert 1,950 tons pressure, the smaller ones 650 tons.

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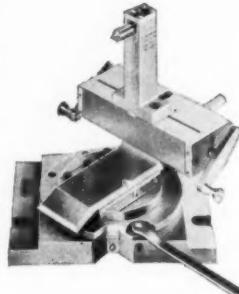
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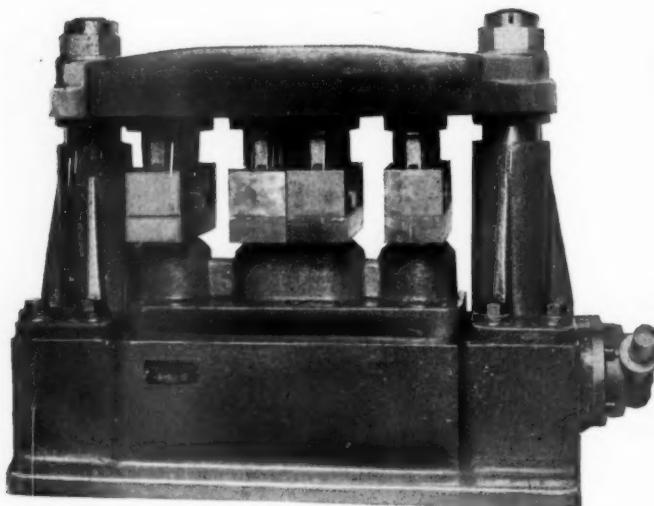
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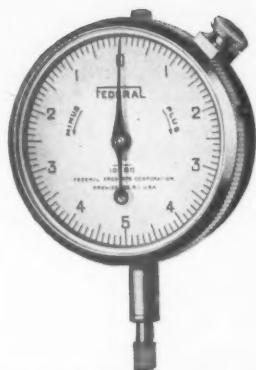
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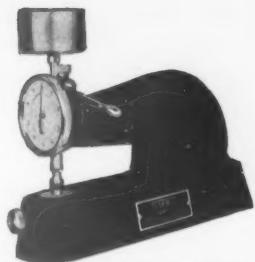
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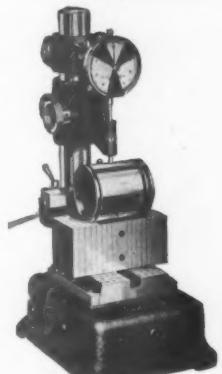
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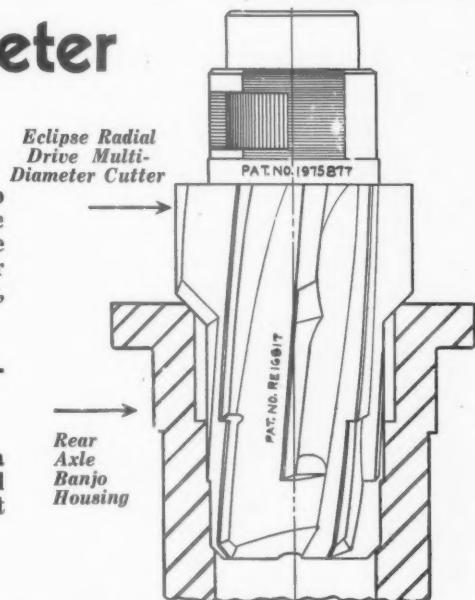
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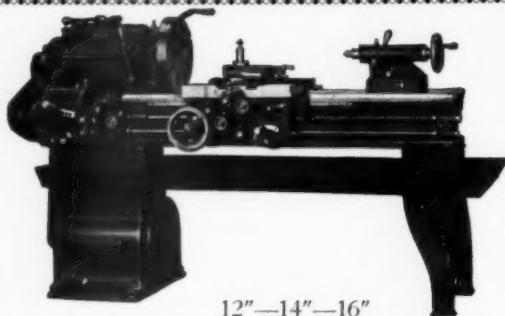
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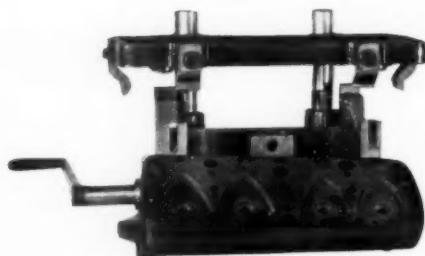
to that, radio circuits are available to South America, to Honolulu, and to the Hawaiian Islands, and to Japan.

A comparatively recent development in connection with toll circuits is of considerable interest. We have for a number of years employed carrier systems I mean terminal devices which permit obtaining over a pair of wires, three additional voice channels. These carrier systems operate at comparatively high frequencies and consist, in principle, of three radio transmitters and three radio receivers at each end of the pair of open wires. The different conversations are selected by means of filters which pass frequencies within certain bands and insure that only the proper frequency reaches the designated receiver.

A more recent application of this principle in connection with an entirely new type of conductor is now undergoing a trial installation between Philadelphia and New York. This is known as the coaxial cable in which the outer conductor is a hollow copper tube in the center of which the second conductor is suspended and insulated from the outer shell by means of proper insulating devices. From the latest information available, it appears that it will be possible to obtain something in the neighborhood of 500 telephone circuits over one pair of conductors, and this, of course, opens up enormous new fields in the engineering of the toll plant proper. It is expected in the beginning that this type of construction will be suitable only for the longer distances.

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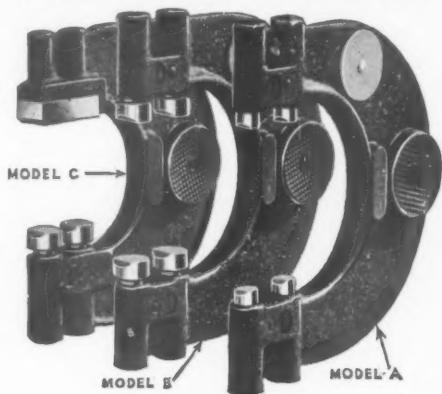
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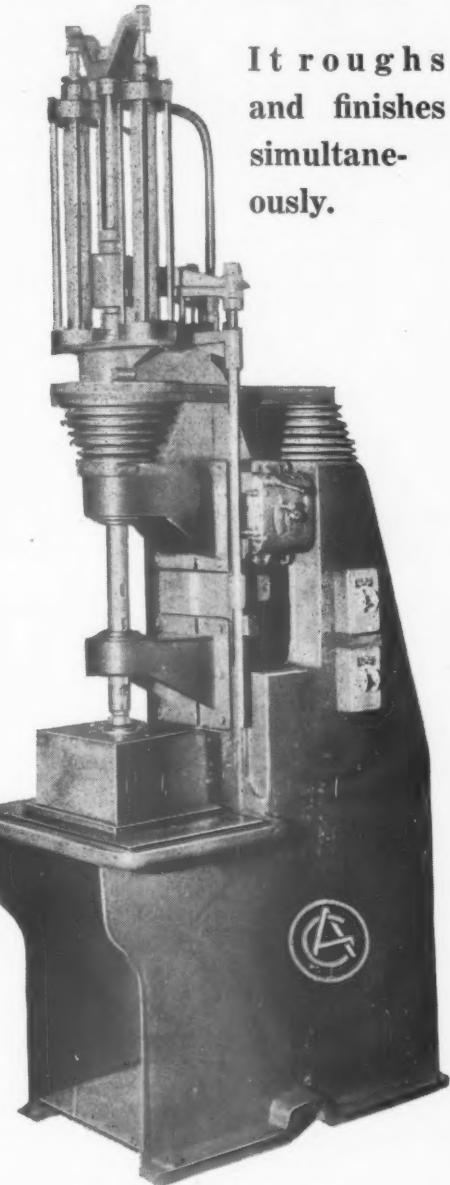
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(Continued from page 14)

of the things that the others have already received.

If there is anything, any want or desire or requests that members care to make that can come through the Secretary's office, or be relayed to the various committee chairmen, we want every one to feel free to come and present them to us and to make the Secretary's office exactly what it is supposed to be.

So far as endeavor is concerned, I can assure you I will do everything possible to carry on the work and to the very best of my ability. I thank you.

Elected Treasurer for the ensuing year, B. L. (Lee) Diamond spoke as follows:

MR. DIAMOND: Gentlemen and friends. Mr. Carpenter just kind of crossed me up. I didn't expect this quite so quickly as I understood that Mr. Sargent would speak before me. A little while ago as we were sitting here enjoying our dinner I asked Mr. Sargent what he was going to say. Well, he didn't know, and neither did I. I would like to say that I will try to do my very best on this job. I don't know what all the duties are, but I am sure I'll find out. Al called me this afternoon and asked if I would be here tonight to help him collect the money at the door. I got down here at seven o'clock, just in time for the dinner, but I have an excuse as I was not actually treasurer until I took the oath a few minutes ago. I will try to do my very best to carry on the work to the best interests of the Society and for the tool engineering profession in general. Thank you.



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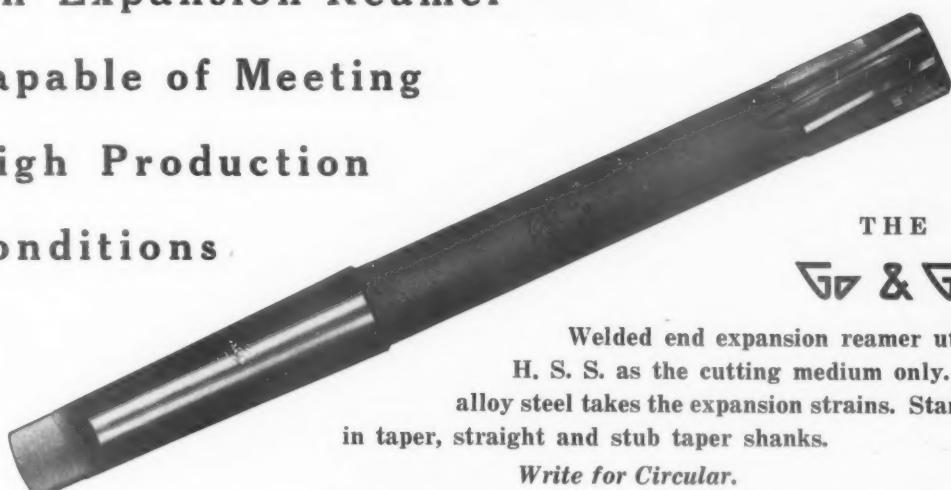
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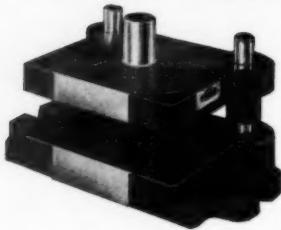
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